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SCIENTIFIC BOOKS.

Monographien aus der Geschichte der Chemie.

Herausgegeben von GEORGE W. A. KAHLBAUM. V. Heft. *Justus von Liebig und Christian Friedrich Schönbein. Briefwechsel 1853-1863.* Herausgegeben von GEORGE W. A. KAHLBAUM und ED. THON. Leipzig, Johann Ambrosius Barth. 1900. 12mo. Pp. xxi+275.

In the summer of 1853 Schönbein paid a visit to Munich, and was introduced by von Pettenkofer to Justus von Liebig. Schönbein was at that time about fifty-four years of age and had won distinction by his discoveries of ozone, gun cotton and collodion; Liebig was three years his junior and his reputation was of the highest. The visitor from Switzerland was received by the resident of Munich most cordially, and to his great astonishment was invited to lecture to the students, at one of the regular hours used by Liebig, on his own studies and discoveries.

This friendly act was the beginning of an intimacy that found expression in the letters preserved in this volume.

Ozone naturally occupies much space in the letters written by Schönbein; in a letter dated September 30, 1853, Liebig objected to the name which was not adopted for a 'law of nature'; he also condemned the term *allo-tropic*. Several letters written in 1854 concern Schönbein's paper, 'Chemical Action of Electricity of Heat and of Light.'

In their letters the friends write of discoveries made by themselves and by other chem-

ists, of theoretical views then under discussion, of their plans for travel and for lecturing, of their publications in periodicals, separates of which they forward to each other, as well as of purely personal and domestic matters, and but rarely of political questions. All the letters are given in full for reasons named by Dr. Kahlbaum in the preface.

About the year 1860 Schönbein wrote to Liebig of finding antozone in fluorite from Wölsendorf, and the Munich chemist replied that he had taken much pains to secure more of the mineral, but in vain; 'all the gold in the world' would not buy it, for no more could be found. In 1863 Liebig had the sad news to communicate of domestic affliction in the loss of a daughter, Frau Carrière. In this intimate way the friends exchanged words of sympathy, their hopes and fears, successes and discouragements, as well as their likes and dislikes.

The bibliographical and biographical notes added by the editor increase greatly the value of the interesting volume, which closes with a letter from Liebig to Schönbein's widow, dated September 8, 1868; in this he refers to his forty-six years of acquaintance with his Swiss friend whom he first met in student days at Erlangen.

HENRY CARRINGTON BOLTON.

Handbook for the Electrical Laboratory and Testing Room. By Dr. J. A. FLEMING. Vol. I., *Equipment, Resistance, Current, Potential, Power.* London, The Electrician Printing and Publishing Company; New York, D. Van Nostrand Co. 8vo. Pp. 538. \$5.00.

Notwithstanding the shower of electrical books that has poured from the press for the past few years, comparatively few text-books have appeared which are well adapted for use in the American colleges of engineering. There has particularly existed a deficiency in the list of books available for the purposes of individual instruction and reference in the electrical laboratories. And a new book designed for this special purpose must be received with interest.

The widely and favorably known name of

the author of the book before us adds to the interest in this volume, and an examination of the book shows that such an interest is justified. The volume (which the author proposes to supplement by a later one) contains five chapters, respectively setting forth the author's view of a proper laboratory equipment (190 pages), the measurement of electrical resistance (148 pages), the measurement of electrical current (82 pages), the measurement of electromotive force (48 pages) and the measurement of electric power (63 pages). It is proposed to complete the work—as announced in the preface—by a second volume devoted to the measurements of capacity, inductance, electric quantity, the magnetic testing of iron, photometry and the testing of electric lamps, the testing of electric batteries, electric meters, dynamos, motors and transformers. It is thus apparent that the book now in hand intentionally deals solely and somewhat abstractly with the measurement of the several fundamental electrical quantities which enter into various engineering tests, but a consideration of these tests is postponed until the later volume. We are therefore perhaps justified in assuming that this volume is intended for preliminary instruction in the laboratory where electrical engineering tests and measurements are actually executed in full. This assumption places a book of this character in its most favorable relation towards the instruction in American engineering colleges, and we will consider it from this point of view. No adequate book occupies this place, and a suitable one would be joyfully hailed by all teachers whose fortunes require them to direct college laboratories devoted to electrical engineering.

For text-book purposes, this volume, however, does not favorably appeal. More than thirty-five per cent. of the text is contained in the first chapter, which deals with the arrangement of electrical testing laboratories and the equipment which the author believes is desirable to have laid down therein. This is an interesting portion of the book, and contains much valuable suggestive matter. It may be read with profit by any teacher of electrical